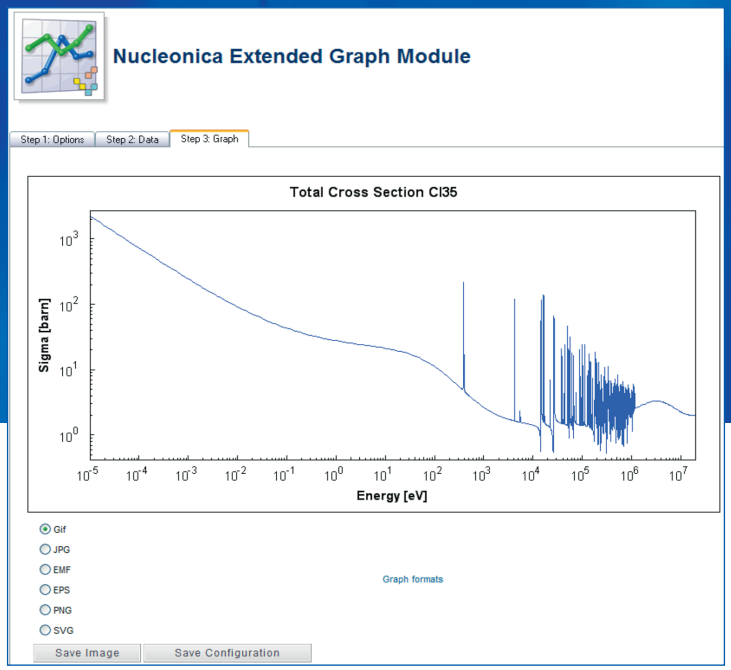
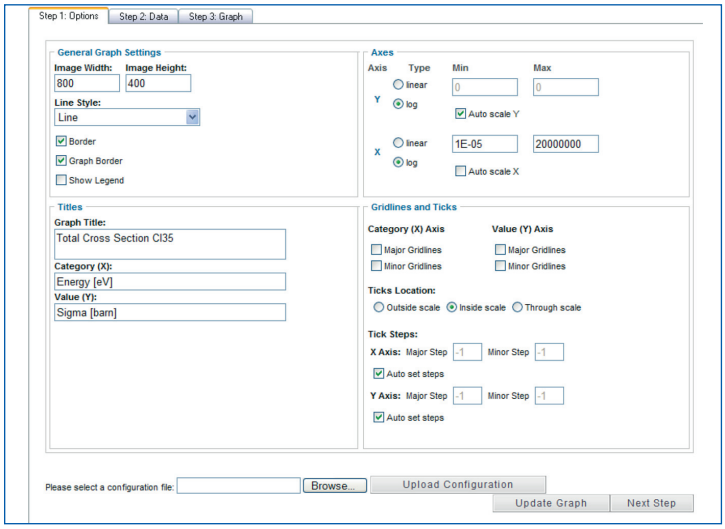
webGraph



Nucleonica webGraph

Nucleonica's webGraph is an easy to use web-based graphics module which allows the user to plot data and create publication quality scientific graphs. There is no software to install. The module can be accessed at any time from any location – only requirements are a web browser and an internet connection. In addition, webGraph provides graphical output for the many nuclear science applications available in Nucleonica (e.g. decay engine, dosimetry & shielding, etc.). Basic graphs can be produced simply by inserting data into the *Data* tab and viewed in the *Graph* tab using default values for the graph settings.



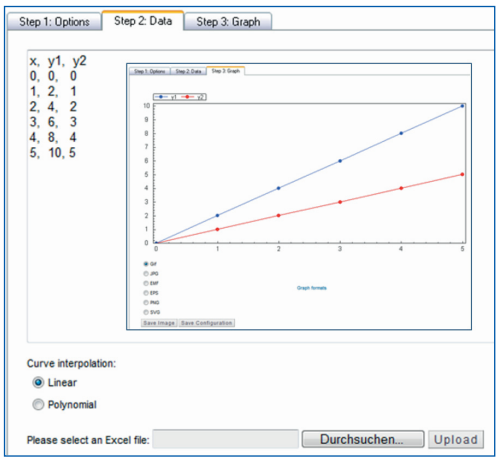
For a more "hands-on" approach, graphs can be created in three basic steps: In the **first step**, general graph settings are specified in the Options tab. These include the image width and height (in pixels), line style (column, line, line with symbols, symbols only), the use of borders and legend, graph title, and labeling for the x- and y-axes. In addition the types and ranges of axes can be specified (linear or log) together with gridlines and ticks. For more advanced users, an entire graph configuration containing both the data and graph settings, can be uploaded (*Upload Configuration*) as an xml file.

In a **second step**, the data to be plotted can be entered manually using the Data tab. A simple example is shown of the input data for two linear plots. In the first line, the data structure is defined e.g. x, y1, y2 (this is also used for the legend). In this case, both curves y1 and y2 have the same x values. Thereafter, the data is listed using commas to separate the x, y1, and y2 values. Using this approach, multiple curves can be displayed by using comma separators following each y value provided the x vales are the same. If the curves y1, y2, etc. have different x values, the data format is slightly different (see below). The resulting plot can be seen in the the *Graph* tab (shown as an

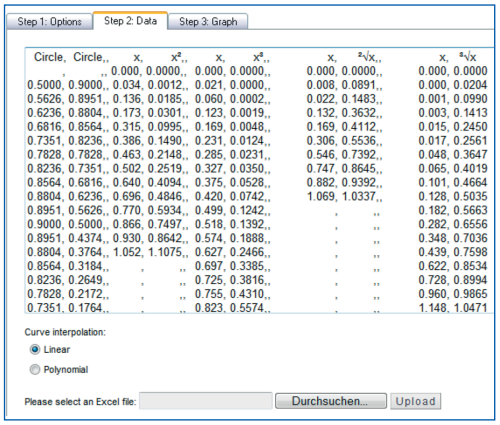
DID YOU KNOW

- *Nucleonica's webGraph allows you to create publication quality scientific graphs in a number of standard formats (gif, jpg, png, emf, eps, svg).*
- *Data can be entered manually, by cut and paste from another application, or by uploading an Excel spreadsheet.*
- *The entire graph configuration (including all data and graph settings) can be saved in xml format.*

inset here). Curve interpolation between the data points can either be linear or polynomial. As an alternative to entering the data manually, an Excel file can be uploaded (shown at the bottom of the *Data* tab) or by "cut and paste" directly from the spreadsheet). In this case the separators are blanks.
In the case where the various curves have different x values, a slightly different format should be used. The datasets (x1,y1), (x2,y2), (x3,y3), etc. should be separted by a comma. Hence the data is structured as: x1, y1,, x2, y2,, x3, y3,, etc. The Data tab for five sets of data (circle, x^2, x^3, $x^{1/2}$, $x^{1/3}$) is shown.

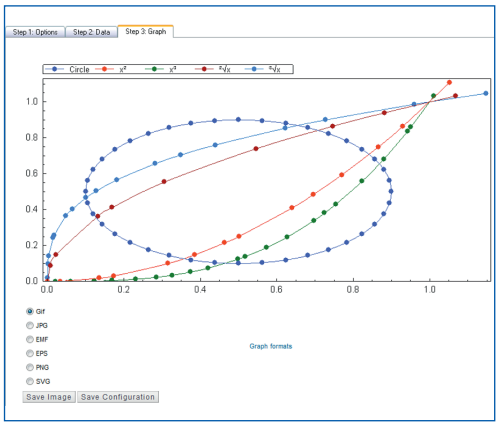


In a **third step**, the plot can be seen in the Graph tab. At this stage, the graph can be finalised by specifying the graph settings (titles for graph and axes, types and ranges of axes, gridlines and ticks, etc.). The graph can then be saved in a number of standard formats or the entire data and graph settings can be stored in an xml configuration file. These are described in more detail.



Graph Formats

The image can be saved in a number of graphical formats. GIF, JPG, PNG are best suited for web pages; EMF (Enhanced Metafile Format) for use in programs such as MS Word, Powerpoint; EPS (Encapsulated PostScript), for use in programs such as Adobe Illustrator, Quark Express; and SVG (Scalable Vector Graphics) which requires the Adobe SVG Viewer, and is best used for printing.



Configuration File

A graph is finalised when, in addition to the basic data, the general graph settings have been specified. This entire information can then be saved in a configuration file in xml format. This has the advantage that at a later time, this configuration file can again be uploaded into the graphics module, with not only the data but all the graph settings.

More information can be found on the Nucleonica wiki at
www.nucleonica.com/wiki